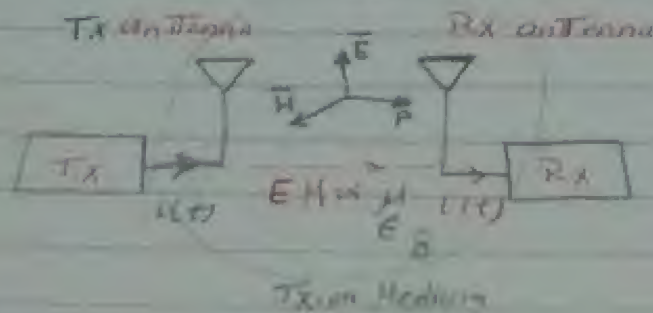


* Define The antenna ?

- [1] \Rightarrow is a system of conductors that converts the electrical signal into electro magnetic wave and vice versa.
- [2] \Rightarrow It couples both the transmitter and receiver to the Transmission Medium.



- [3] \Rightarrow The antenna is the eye of any wireless communication system

* Types of the antennas *

- \Rightarrow There are many types of antennas that depend on
- 1- Application
 - 2- Operating frequency

Wire antenna

Dipole antenna



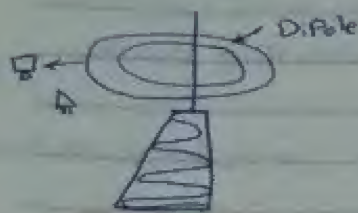
إشعاع ال Power في كل الاتجاهات
مما يدل على قوة

* 8. Figure (8) على شكل

- * is called (omni Directional pattern)
($D > 1$)

Applications :-

① Used in Radio and TV Broad Casting



② Used in Mobil Communications



* Define

* ع, ب

Isotropic antenna (Source)



ع, ب (Volume charge, Point charge)

* Radiate equal Power in all Direction

* عبارة عن كرة اذ جميع موجات الكهرومغناطيسية (Power) في كل الاتجاهات

$$\text{Directivity} = D = 1$$

* Define Directivity

* is The ability of the antenna To Concentrate The Power in a given Direction.

* هي قدرة الهوائي على تجميع ال Power في اتجاه معين

② Mono Pole antenna



More Directive Than Mono Pole

* ال Directive اعلى لانه الزاوية التي ينتج فيها اقل

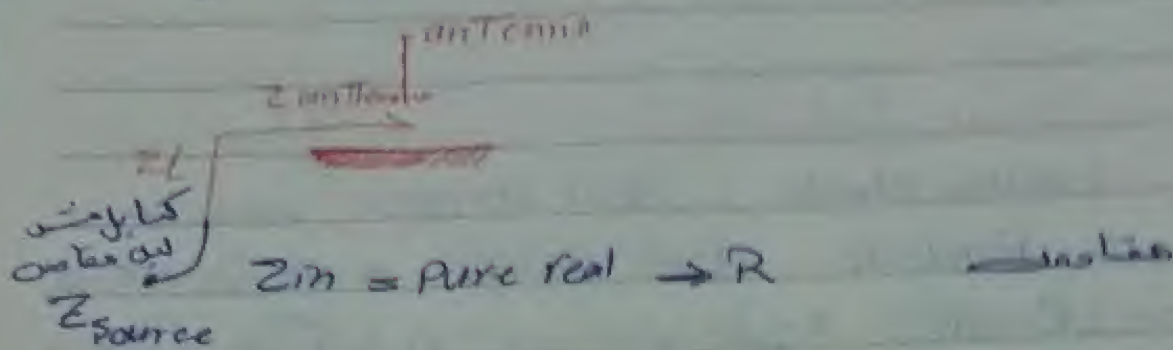
(النمط تقريبا بالقطر)

* Application *

$\frac{\lambda}{2}$ Mono Pole is used in TV Broad casting

* Why $\frac{\lambda}{2}$ (1) To Save half of the emitting power from the corresponding Diode.

(2) $\frac{\lambda}{2}$ Mono Pole Provide pure input impedance ante



To Facilitate the impedance Matching Process

$$Z_{in} = Z_L \quad , \quad \Gamma = \frac{Z_{in} - Z_L}{Z_{in} + Z_L} = 0$$

$$Z_{in} = Z_L$$